

SCHOOL SECURITY:

HOW ARCHITECTURAL DESIGN CAN CREATE A SECURE SCHOOL ENVIRONMENT

By Gary L. Armbruster and David J. Henebry

An architect has no greater nightmare than to awaken to a breaking news story of a senseless massacre carried out in a building he designed and built. The agonizing questions that are asked, many times having no answers, are usually centered on “What could we have done to prevent it?”

Since 1992 there have been 387 US school shootings. Along with the recent school shootings at Virginia Tech and Sandy Hook, these statistics have created an environment of needing answers on how to address these problems. Some people think the solution lies in gun control; others believe that fortifying a school will solve the problem; still others feel that armed teachers or school resource officers will stop the violence.

From Columbine to Sandy Hook we can investigate what went wrong, but the underlying cause that is common to every school shooting is that the shooters had some type of mental health issue. While that approach may deal with the root cause, there has to be a consideration of what can be done to protect and defend our students until such time as the cause has been effectively addressed.

Based on current statistics we also recognize that the probability of an attack is less than 3/100ths of 1% over a 20 year period. With this recognition, we want to continue to design schools as friendly education environments.

“Mental, emotional, and behavioral (MEB) disorders are a major health threat and are as commonplace today among young people as a fractured limb,” according to Terri White, commissioner for the Oklahoma Department of Mental Health. In fact, one in five young people have one or more MEB disorders at any given time, and half of all mental illnesses occur by age 14 and three-fourths by age 24.

Recent school shootings in the U.S. have been committed by individuals within this age range yet people continue to blame and turn the focus toward other areas. Excuses include: “He just didn’t fit the profile,” “He just snapped,” “No one knew,” “He was a loner,” and “School violence is rampant.” The reality is that we cannot predict the origin of the next threat and it is virtually impossible to guarantee an incident will not happen

at any school. We must be prepared on the front end. And there is a way.

Crime Prevention Through Environmental Design (CPTED) principles are based on the theory that the proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime and an improvement in the quality of life. These procedures are site-specific and can be applied to new and existing projects regardless of size or cost.

These principles that should be omnipresent in designing and building a school facility:

1. Natural Surveillance
2. Access Control
3. Territoriality
4. Maintenance

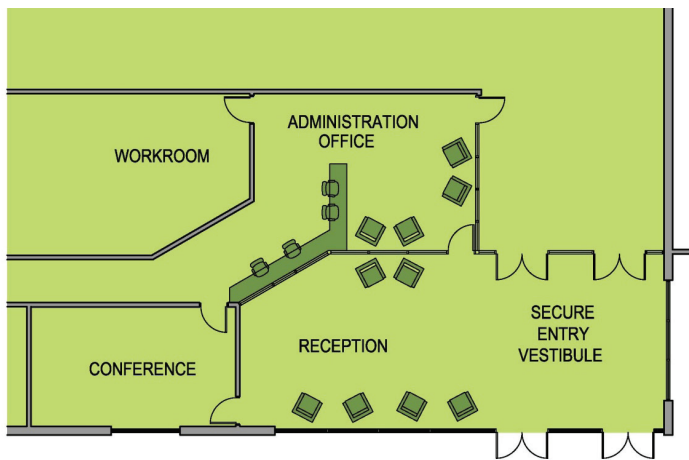
Obviously, Natural Surveillance is the first defense and is defined as the physical ability to see what’s going on in and around the school. Solid walls, tall shrubs, parked cars, outbuildings, sculptures, large signs and other obstacles can block natural surveillance. How the building is sited can provide passive defense through focused observation. How the building and parking are oriented combined with how the building is approached can play a substantial role in the staff’s ability to visually monitor approaching vehicular and pedestrian traffic. For staff to maintain vigilance, they must be able to see as much as possible of the premises.

Natural and landscape features can be creatively used to provide a dual purpose of aesthetic and barrier while leaving visual access to the property. For example, wrought iron can be used in place of solid fences to promote visibility while maintaining a barrier.

Closely aligned with that is the issue of Access Control. Entries and exits have always been designed for flow and convenience

but now with the new culture are designed for security. Once there is a breach it is too late to worry about control of the entries.

By using a combination visibility, communication and an interlock vestibule, the staff can control access and monitor exiting from the school. With specialized glazing the school can maintain a friendly experience for visitors yet provide defensibility if an event occurs. The orientation of the entry



Building entry plan showing a secure entry vestibule protected with special glazing.

points must be coordinated with the siting of parking and public pedestrian access.

The building's internal circulation plays a significant role in visually monitoring activities within the building. Good segregation of public areas and education areas provide additional levels of security and people management. Controlled access within the building provides an additional layer of regulation of access/penetration. FEMA-rated shelters can provide a fallback position for both weather and assault situations. Direct classroom egress provides improved interior/exterior opportunities for teachers and students, plus an additional egress route when the corridors are not safe to exit.

We're all familiar with what "territoriality" means when it refers to our family dog. Not surprisingly it also applies to buildings and refers to measures that reinforce a message of ownership over the school. Restrictive signs that direct visitors to the office can limit the number of people who try to enter a facility while the placement of fencing, signage, pavement and landscaping also communicate territoriality. Defining the borders of the campus helps establish where the public space ends and school begins.

While we know that maintenance is a part of properly managed building the role it plays in security is often overlooked.

Simply put, maintenance further reinforces territoriality. Any unkempt part of the campus sends a message that no one is particularly concerned about or possessive of that part of the school. In short, if the school is well maintained it makes clear that it is part of the campus that is being monitored.

CPTED principles should be used in conjunction with all of the other security measures a school employs to create an overall "Security Program" for the school district. Critical to protection and safety are the abilities to communicate and keep life protection systems functioning. Redundancy and backup systems are strongly recommended. The inability to communicate or sound the alarm because the power has been interrupted can render all of the safety precautions useless.

But it isn't all about how the buildings are designed. Some educators are not blessed with facilities that have these safety factors built in. Organizational approaches, such as using the school for officer training and training students to talk about potential threats to authorities are realistic precautions. Some that have been tried nationwide could be included in the safe school debates that are a non-architectural alternative.

The ability to communicate with students is key. In almost every school shooting incident someone knew something prior to the event. Students must know it is alright, in fact, expected of them to talk with someone in authority at the first hint of danger.

Bill Bond, the school safety specialist for the National Association of Secondary School Principals says: "In a school, your only real protection is kids trusting you with information. If they don't trust you with information and someone is planning to do something, it's a matter of how many will be killed before you kill him."

And Bond should know. Over the course of 12 seconds in 1997, one of his students shot and killed three classmates, wounded five more, then put the gun in Bond's hand. Bond was, at the time, principal at Heath High School in West Paducah, Kentucky.

Embracing successful organizational and operational management policies helps to develop well-trained administrators, teachers, and students and create safe learning environments. School districts should conduct the required amount of drills as dictated by their State. They should outline detailed security levels for the school and ensure administration, families and the community understands them. Districts should implement a consistent plan for maintaining communication. Using your school for officer training allows local law enforcement to use your schools as training grounds during the summer to practice "active shooter" scenarios. This allows them to test response time to your school and better acquaint themselves with your location and layout should an event occur.

So is there such a thing as a safe school? There is probably no 100% safe school but most schools with adherence to the guidelines can offer a high degree of safety to its students,



Officers pictured are using an existing school for first responder training.

faculty and staff. From recognizing that children and adults have mental health issues that could contribute to school violence to engaging architects to design facilities that secure our schools, we need to recognize important areas that can contribute to having a safer and more peaceful school environment. Some of the overall guidelines that will affect a school's long term safety rating are:

- Schools must remain a climate focused on respect, acceptance of diversity and peaceful resolutions to conflict.
- Schools with strong academic and extra-curricular programs historically are schools with lower violence. Also prevention and intervention programs will only bolster the affects created by this strong environment.
- A school must be balanced and pro-active with school security measures that provide a safe environment.
- A school staff must be trained to recognize mental health issues in our children and to see the early warning signs of potential violence.

Finally, educators who have active working relationships with police/fire/EMS and other community public safety personnel will be the most prepared. In the years to come, hopefully as these guidelines and precautions are implemented and schools become more and more prepared, there will be fewer and fewer architect's nightmares. We can only pray and prepare.

About Gary L. Armbruster

Gary Armbruster, AIA, CEFP, is a principal architect and director of development for the architecture firm of MA + Architecture, LLC. Mr. Armbruster is a graduate of the University of Oklahoma with a Bachelor of Arts and a Master of Architecture. Gary is also a Certified Educational Facility Planner (CEFP) and has been designing K-12 and higher education projects since the beginning and was recently appointed by the Lt. Governor of Oklahoma as the only architect on the "Oklahoma School Security Commission".

About David Henebry

David J. Henebry, AIA, REFP, is a principal at Dewberry and has twenty-plus years' experience in architecture and education design. Mr. Henebry has established himself as an expert in the planning and design of education facilities and has provided industry leadership over the course of his career. His successful projects demonstrate excellence in creating exceptional education environments. He has served as moderator and panelist at leading architectural conferences and has served on several Master Facility Planning Committees.

